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Fractal-polarization correction in time domain dielectric spectroscopy

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Abstract

Electrode polarization appears self-similar in time and occurs even when the geometrical electrode structure is not fractal. Problems associated with electrode polarization in time domain dielectric spectroscopy of conductive liquids persist to much higher frequencies than generally appreciated. An explicit consideration of the fractal nature of such polarization, irrespective of the fractal (geometrical) structure of the electrode, leads to a concise correction for such polarization effects. This correction is illustrated for an aqueous electrolyte.